

In the Claims:

1. (currently amended) A process for treating waste water to remove contaminants from the waste water, wherein the process includes providing a separation unit for removal of contaminants from the waste water, and wherein the process further comprises:

A. providing a recycle stream of recycled waste water from the influent end of the separation unit and treating the recycled waste water with a coagulant and injecting non-dissolved air into the recycled waste water, wherein the waste water is recycled by a pump which operates at a pressure below the pressure required to dissolve the air;

B. mixing the treated recycled waste water with an incoming flow of untreated raw waste water;

C. adding a flocculating agent to the mixture of treated and untreated waste water to flocculate contaminants in the waste water mixture, whereby the non-dissolved air is entrapped within the flocculated contaminants;

D. moving the waste water mixture to the separation unit whereby the flocculated contaminants rise to an upper area of the unit;

E. removing the flocculated contaminants from the upper area of the unit;

F. removing a first portion of the waste water mixture from a lower portion of the unit; and

G. recycling a second portion of the waste water mixture through the process as the recycle stream of recycled waste water from the influent end of the separation unit.

2. (original) A process as defined by Claim 1 wherein, prior to addition of the flocculating agent, the recycled waste water is treated with a pH adjusting material to adjust the pH of the recycled waste water.

3. (previously presented) A process as defined by Claim 2 wherein the pH adjusting material includes a tannin, lignin, hydroxide, metal-containing compound, acidic compound or a mixture of such materials.

4. (previously presented) A process as defined by Claim 3 wherein the pH adjusting material includes a tannin, lignin, ferric chloride, ferric sulfate, aluminum chloride, aluminum sulfate or a mixture of such materials.

5. (previously presented) A process as defined by Claim 3 wherein the pH adjusting material includes sulfuric acid, hydrochloric acid, nitric acid or a mixture of such materials.

6. (previously presented) A process as defined by Claim 3 wherein the pH adjusting material includes sodium hydroxide, potassium hydroxide, calcium hydroxide or a mixture of such materials.

7. (previously presented) A process as defined by Claim 1 wherein the flocculating agent includes a tannin, lignin, cationic polymer, anionic polymer or a mixture of such agents.

8. (previously presented) A process as defined by Claim 7 wherein the flocculating agent includes a cationic polymer, an anionic polymer or a mixture of such polymers.

9. (previously presented) A process as defined by Claim 7 wherein the flocculating agent includes a polyacrylamide.

10. (previously presented) A process as defined by Claim 7 wherein the flocculating agent includes a polyamine.

11. (original) A process as defined by Claim 1 wherein the air is entrapped within the flocculated contaminants.

12. (original) A process as defined by Claim 1 wherein the second portion of the waste water mixture is recycled by a low pressure pump.

13. (original) A process as defined by Claim 1 wherein the second portion of the waste water mixture is recycled by gravity flow.

14. (original) A process as defined by Claim 1 wherein molecules of the non-dissolved air attach to the coagulant, and an initial pin floc is formed in which the air molecules are entrapped within the pin floc.

15. (original) A process as defined by Claim 1 wherein the air is not pressurized to a point at which air can be dissolved.

16. (cancelled)

17. (currently amended) A process for treating waste water to remove contaminants from the waste water, wherein the process includes providing a separation unit for removal of contaminants from the waste water, and wherein the process comprises:

A. providing a recycle stream of recycled waste water from the influent end of the separation unit and treating the recycled waste water with a coagulant and injecting non-dissolved air into the recycled waste water, wherein the waste water is recycled by a pump which operates at a pressure below the pressure required to dissolve the air;

B. treating the recycled waste water with a material to adjust the pH of the recycled waste water;

C. mixing the treated recycled waste water with an incoming flow of untreated raw waste water thereby forming a waste water mixture;

D. adding a flocculating agent to the mixture of treated and untreated waste water to flocculate contaminants in the waste water mixture, whereby the non-dissolved air is entrapped within the flocculated contaminants.

E. moving the waste water mixture to the separation unit in which the flocculated contaminants rise to an upper area of the unit;

F. removing the flocculated contaminants from the upper area of the unit;

G. removing a first portion of the waste water mixture from a lower portion of the unit;

H. recycling a second portion of the waste water mixture through the process as the recycle stream of recycled waste water from the influent end of the separation unit; and

I. adding a coagulant to the second portion of the waste water mixture after the second portion is treated with a material to adjust the pH of the recycled waste water.

18. (original) A process as defined by Claim 17 wherein the coagulant is a tannin, lignin, hydroxide, metal-containing compound, acidic compound or a mixture of such compounds.

19. (original) A process as defined by Claim 18 wherein the coagulant is ferric chloride, ferric sulfate, aluminum chloride, aluminum sulfate or a mixture of such materials.

20. (original) A process as defined by Claim 18 wherein the coagulant is sulfuric acid, hydrochloric acid, nitric acid or a mixture of such materials.

21. (original) A process as defined by Claim 18 wherein the coagulant is sodium hydroxide, potassium hydroxide, calcium hydroxide or a mixture of such materials.

22. (original) A process as defined by Claim 17 wherein the second portion of the waste water mixture is recycled by a low pressure pump.

23. (original) A process as defined by Claim 17 wherein the second portion of the waste water mixture is recycled by gravity flow.

24. (original) A process as defined by Claim 17 wherein the second portion of the waste water mixture is recycled by a low pressure pump.

25. (original) A process as defined by Claim 17 wherein the second portion of the waste water mixture is recycled by gravity flow.

26. (original) A process as defined by Claim 17 wherein molecules of the non-dissolved air attach to the coagulant, and an initial pin floc is formed in which the air molecules are entrapped within the pin floc.

27. (original) A process as defined by Claim 17 wherein the air is not pressurized to a point at which air can be dissolved.

28. (cancelled)